UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73514

SAINT GERMAIN STREET (MSAS NO. 128)

OVER THE

MISSISSIPPI RIVER

DISTRICT 3 - STEARNS COUNTY, CITY OF ST. CLOUD

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 83)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 73514, Piers 1, 2 and 3, were sound and in good condition with no structurally significant defects observed. The footings of Piers 1 and 2 were partially exposed at the upstream end of the pier with a maximum vertical face exposure of 1 foot. Three steel I-beams extended through each pier shaft at both 5 and 11 feet below the waterline. The channel bottom appeared stable with no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) The footing at Pier 1 was exposed 5 feet across the upstream side of the pier, immediately around the upstream nose, and for approximately 10 feet along the south side of the pier with a maximum vertical exposure of 1 foot at the upstream end.

(B) Footing exposure was detected across the entire upstream nose and extending approximately 8 feet down the south face and 5 feet down the north face of Pier 2 with a maximum vertical face exposure of 8 inches at the upstream end.

(C) Three steel I-beams extended through each pier shaft at both 5 and 11 feet below the waterline. The steel I-beams were cut flush with the pier shaft faces and were likely used as cofferdam braces during construction. The concrete surrounding the I-beam was smooth and sound with no deficiencies.

(D) Light scaling with a maximum penetration of 1/8 inch and minor areas of impact damage with penetrations of up to ½ inch was observed on all piers from 3 feet above to 1 foot below the waterline.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 73514

Feature Crossed: Mississippi River

Feature Carried: Saint Germain Street (MSAS No. 128)

Location: District 3 - Stearns County, City of St. Cloud

Bridge Description: The bridge consists of a continuous four span multiple steel girder superstructure supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and three reinforced concrete piers. The piers are numbered 1 through 3 starting from the southwest end of the bridge. The pier footings are founded on timber piles.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E.

Dive Team: John J. Loftus, Valerie Roustan.

Date: August 15, 2007

Weather Conditions: Partly Cloudy, 69° F

Underwater Visibility: 2.0 feet

Waterway Velocity: 1.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1, 2 and 3.

General Shape: The piers are single stem hammerheads with oblong rectangular shafts and rounded ends supported by a rectangular footing/seal combination founded on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 18.7 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 43.8 feet below reference. Waterline Elevation = 981.0.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code N/92

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No

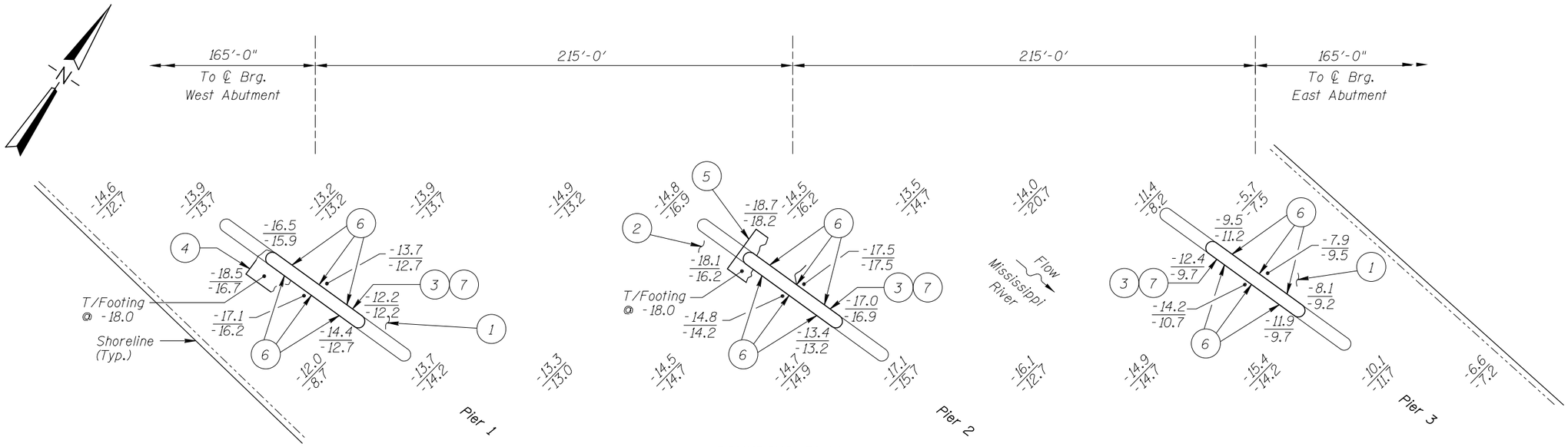
Photograph 1. Overall View of Piers 1 and 2, Looking East.

Photograph 2. View of Pier 1, Looking South.

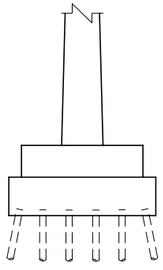
Photograph 3. View of Pier 2, Looking Northwest.

Photograph 4. View of Pier 3, Looking Northwest.

Photograph 5. Close up View of Typical Light Scaling around Mid Section of Pier 3 at the Waterline, Looking South.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

INSPECTION NOTES:

1. The channel bottom material at Pier 1 and 3 consisted of 12- to 18-inch-diameter riprap with sand infilling and no probe rod penetration.
2. The channel bottom material at Pier 2 consisted of 1-foot-diameter riprap with sand and gravel infilling and up to 4 inches of probe rod penetration.
3. Light scaling with a maximum penetration of 1/8 inch and areas of impact damage with penetration up to 1/2 inch were observed on all piers from 3 feet above to 1 foot below the waterline.
4. Footing exposure was detected, extending 5 feet across the upstream face, immediately around the nose, and for approximately 10 feet along the south side of Pier 1 face with a maximum vertical face exposure of 1 foot at the upstream end.
5. Footing exposure was detected across entire upstream nose and extending approximately 8 feet down the south face and 5 feet down the north face of Pier 2 with a maximum vertical exposure of 8 inches at the upstream end.
6. A line of 3 steel I-beams was observed extending through all of the piers and cut flush with the pier shaft faces at 5 feet and 11 feet below the waterline. The concrete surrounding the I-beam was smooth with no deficiencies.
7. Above and below scaling, the concrete surfaces of pier shafts and footings (where exposed) were typically smooth and sound with random minor areas of poor consolidation up to 1/4 inch penetration.

GENERAL NOTES:

1. Piers 1 through 3 were inspected underwater.
2. At the time of inspection on August 15, 2007, the waterline was located approximately 43.8 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds to a waterline elevation of 981.0 based on the previous report dated September 27, 2002.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

Legend

-12.0	Sounding Depth (8/15/07)
-13.0	Sounding Depth (9/27/02)

Note:

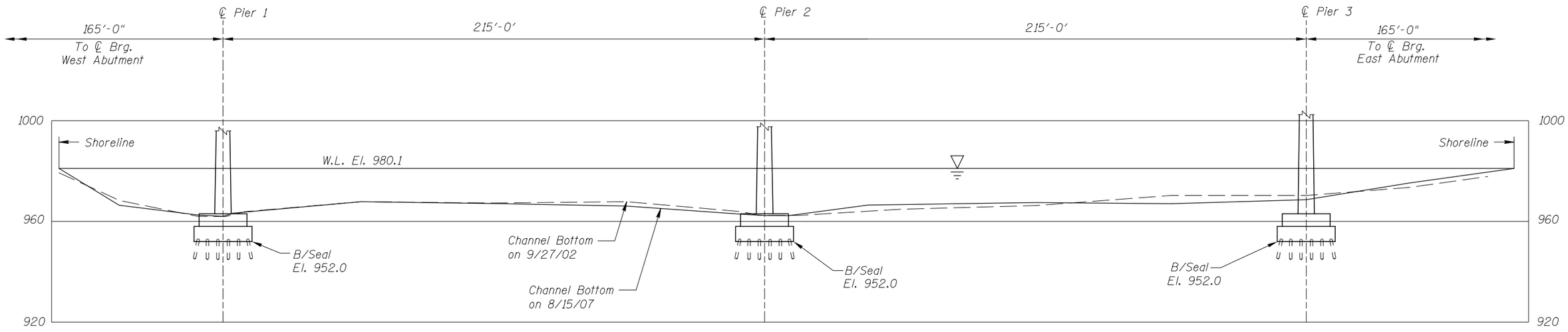
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

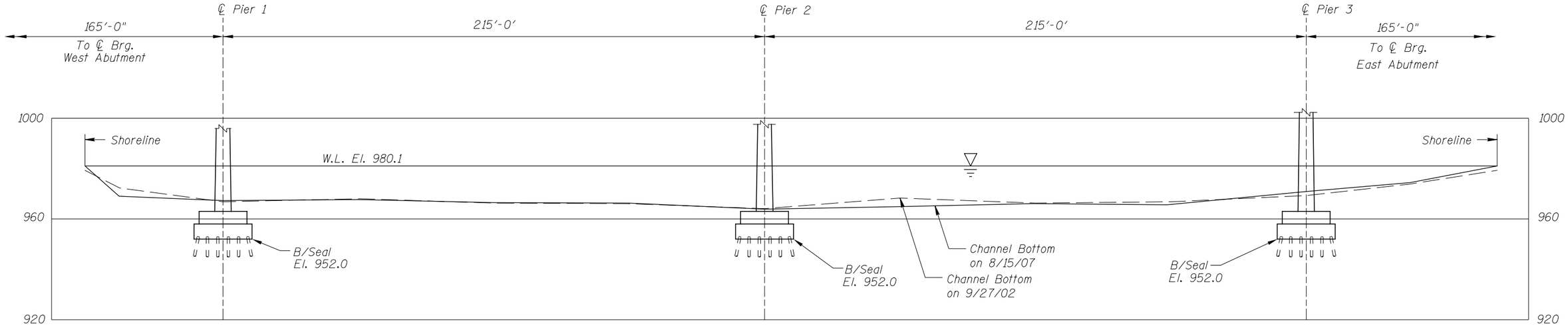
STRUCTURE NO. 73514
OVER THE MISSISSIPPI RIVER
DISTRICT 3, STEARNS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: NTS
Code: 52210083		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UNDERWATER BRIDGE INSPECTION

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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: 1"=40'
Code: 52210083		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 15, 2007
ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.
BRIDGE NO: 73514 WEATHER: Partly Cloudy, 69° F
WATERWAY CROSSED: Mississippi River
DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR
_____ OTHER
PERSONNEL: John J. Loftus, Valerie Roustan
EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Fathometer, Lead Line, Probe Rod, Camera
TIME IN WATER: 11:30 A.M.
TIME OUT OF WATER: 12:15 A.M.
WATERWAY DATA: VELOCITY 1.0 f.p.s
VISIBILITY 2.0 feet
DEPTH 18.7 feet maximum at Pier 2
ELEMENTS INSPECTED: Piers 1, 2 and 3
REMARKS: Band of light scaling with 1/8 inch penetration around pier shafts at waterline. Above and below scaling, the concrete surfaces of pier shafts and footings were typically smooth and sound with random minor areas of poor consolidation or impact damage and up to ½ inch penetration. Partial footing exposure was observed at the upstream ends of Piers 1 and 2 with a maximum vertical face exposure of 1 foot. A line of three steel I-beams extended through each pier shaft at both 5 and 11 feet below the waterline. The channel bottom appeared stable with no appreciable changes observed since the previous inspection.

FURTHER ACTION NEEDED: _____ YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 73514
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Mississippi River

INSPECTION DATE August 15, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	18.5’	N	7	7	9	N	7	6	8	8	N	6	7	N	N	N	N	N
	Pier 2	18.7’	N	7	7	9	N	7	6	N	N	N	6	7	N	N	N	N	N
	Pier 3	14.2’	N	7	N	9	N	7	7	8	8	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Band of light scaling with 1/8 inch penetration around pier shafts at waterline. Above and below scaling, the concrete surfaces of pier shafts and footings were typically smooth and sound with random minor areas of poor consolidation or impact damage and up to ½ inch penetration. Partial footing exposure was observed at the upstream ends of Piers 1 and 2 with a maximum vertical face exposure of 1 foot. A line of three steel I-beams extended through each pier shaft at both 5 and 11 feet below the waterline. The channel bottom appeared stable with no appreciable changes observed since the previous inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.